BUFFALO POUND TASTE AND ODOUR CONTROL FACILITIES

FINAL REPORT

G.A.C. MANAGEMENT COMMITTEE
FEBRUARY, 1989

Regina, Saskatchewan
February 22, 1989

Honourable Lucien Bouchard
Minister
Environment Canada

Honourable Jack Klein
Minister
Saskatchewan Department of Urban Affairs

His Worship Doug Archer
Mayor
City of Regina

His Worship Stan Montgomery
Mayor
City of Moose Jaw

Gentlemen:

The Management Committee for the construction of the Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw, Saskatchewan presents this report on the completed construction of the system and its successful operational development.

Over the years, the offensive taste and odour of water of Buffalo Pound Lake, which is used to supply the drinking water for the Cities of Regina and Moose Jaw, resulted in questions about its quality and reflected negatively on the communities as places to live and work.

During the last four summers, since the construction of the Granular Activated Carbon Water Treatment System, operations have been successfully refined so that the taste and odour problems have been eliminated. Operational procedures have been developed to manage even those occasions when algae blooms on Buffalo Pound Lake exceed normal summer levels of occurrences.

Construction of the Granular Activated Carbon Treatment System was completed by June 1986 at a total cost of 15 million dollars. Under the Canada-Saskatchewan and Saskatchewan-Cities of Regina and Moose Jaw, Agreements, Canada, Saskatchewan and the Cities contributed five million dollars each to the project.

The operation of the system has been monitored and procedures have been refined to such a degree that the Granular Activated Carbon treatment process has been specified in the ongoing expansion of the Buffalo Pound Water Treatment Plant.

2/. . .

An extensive public information program was conducted to advise the residents of Regina and Moose Jaw that the GAC system was being installed. Further attention was drawn to the system in 1986 when an unusually high algae growth overloaded the system and caused a short period of taste and odour. This occurrence served to help develop advanced treatment techniques and reminded the public that without the system, the taste and odour problem was still there.

Water quality testing by provincial and federal agencies, in addition to the regular plant testing has been conducted during the construction of the GAC system and the development of the operational procedures to ensure that water quality standards were met.

The members of the Management Committee express their pleasure in having an opportunity to undertake this assignment.

Respectfully submitted,

R. A. Halliday
Environment Canada

L. D. Schnell
City of Regina

R. E. Schneider
Saskatchewan Department
of Urban Affairs

A. J. Schwinghamer
City of Moose Jaw

P. M. Wagner
Western Economic
Diversification of Canada

90-06376/

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G.A.C. MANAGEMENT COMMITTEE

FINAL REPORT

The Committee

R.A. Halliday	Environment Canada
K.E. Schneider	Saskatchewan Urban Affairs
L.D. Schnell	City of Regina
A.J. Schwinghamer	City of Moose Jaw
P.M. Wagner	Western Economic Diversification Canada

Secretary

Ron Hofer

Project Manager — City of Regina, Municipal Engineering

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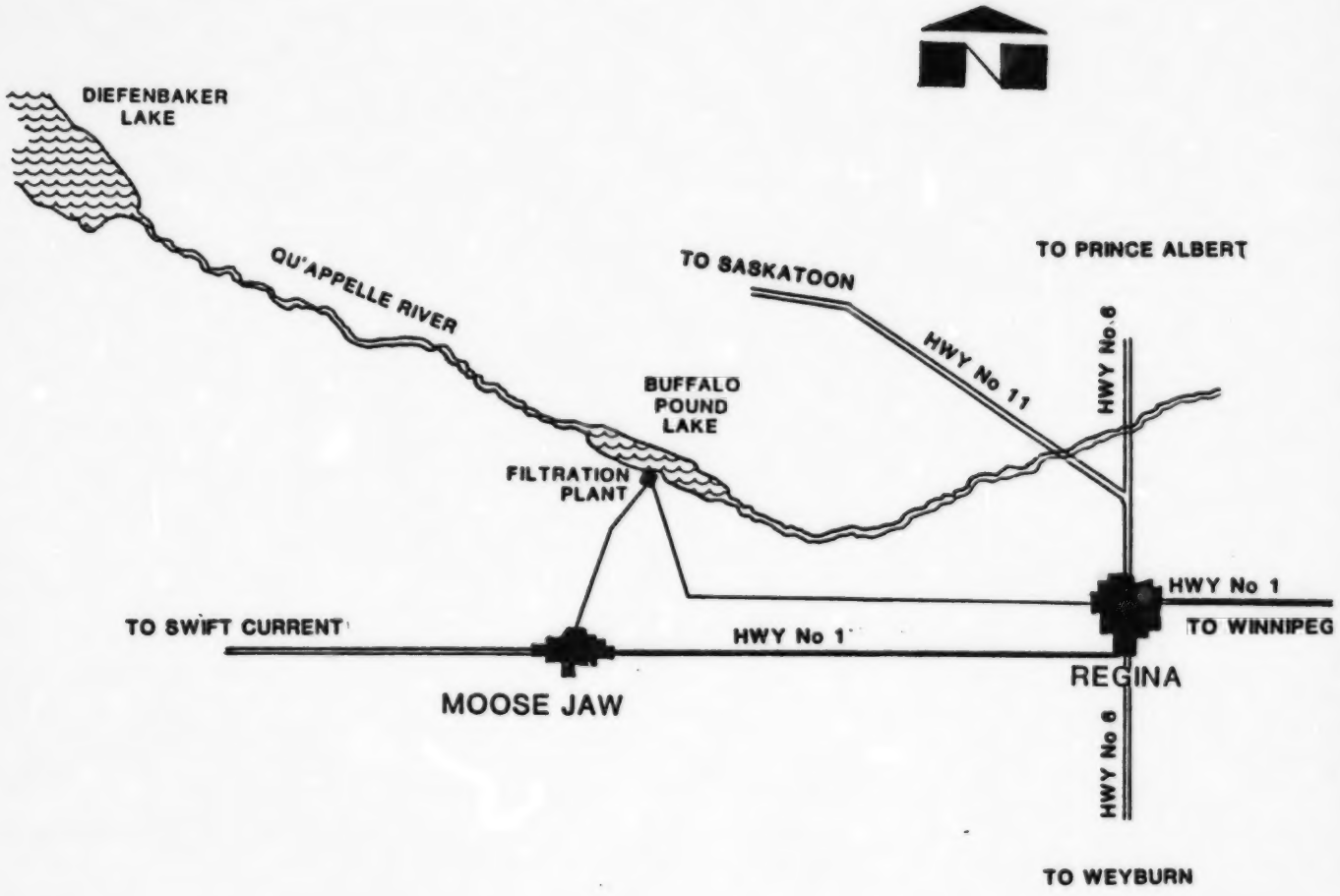


Fig 1 LOCATION MAP

1. INTRODUCTION

Regina and Moose Jaw share a common water treatment plant which draws its water from a shallow lake, Buffalo Pound Lake, in the Qu'Appelle River system about 50 km. northwest of Regina. In summer and autumn, the Regina and Moose Jaw water supply suffered from a severe taste and odour problem because of weed and algae growth in the lake. The problem raised questions concerning the quality of the water supply and reflected negatively on the communities as places to live and work. The construction of a granular activated carbon (GAC) water treatment system was proposed for an immediate solution to the problem.

Activated carbon has been used in the treatment of public water supplies for over 50 years as a means of removing organic materials that cause taste and odour problems. A more recent technology calls for use of granular, rather than powdered, carbon. The granular form of activated carbon can be regenerated and re-used, thereby reducing annual operating costs.

2. BACKGROUND TO SENIOR GOVERNMENT INVOLVEMENT

In 1980, the cities of Regina and Moose Jaw first approached the Province for a financial commitment toward funding whatever solution was necessary to improve the quality of water that was available to their residents. The cities expressed the view that without senior government assistance, local utility rates would increase substantially. At the same time, the Province was lobbied for action on the water quality problem through letters from residents and visitors, from groups such as the Chamber of Commerce and from the convention and tourism industry. In addition, the extreme taste and odour problems for the cities' water supply was criticized in the local and national press.

A two-phase study of the possible options to solve the water problem was undertaken by the Province. The first phase of the study culminated with a 1982 decision by the Province to assist in funding the GAC option.

In August, 1983, the Province and Cities approached the Federal Government for assistance in funding a solution to the cities water problems. The basis for this funding request was that the project, specifically the construction of the concrete cells for the carbon filtration beds, was relatively labour intensive and as such would qualify under federal economic development programs. Specific new employment opportunities were expected in the depressed construction and engineering industries with an overall direct employment of 250 person-years anticipated. The project also provided the opportunity to prove this technology in Canada.

In late 1983, the Federal Government announced a commitment to fund 50 per cent of the project to a maximum of $5 million under the upcoming Canada-Saskatchewan Economic and Regional Development Agreement. This commitment together with the previous commitments of the Provincial Government and the cities of Regina and Moose Jaw established the funding for the project.

Both the Federal and Provincial governments agreed that improvement in the water quality would have a positive effect on both economic and industrial development opportunities and the quality of life in the two cities.

3. THE AGREEMENTS

Participation by the three levels of government was formalized by three agreements:

Canada-Saskatchewan Agreement Respecting the Construction of a Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw.

Saskatchewan-Cities of Regina and Moose Jaw Agreement Respecting the Construction of a Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw.

Regina-Moose Jaw Agreement Respecting the Construction of a Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw.

Copies of the Agreements are provided as an Appendix.

3.1 Description of the Agreements

The Canada-Saskatchewan Agreement Respecting Construction of a Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw was signed on May 1, 1984. The project was estimated to cost $15 million.

Under this Agreement, Canada agreed to provide Saskatchewan an amount of money not exceeding $5 million or 50 per cent of the eligible expenditures, whichever is lesser, over the period of the Agreement (April 1, 1984 to March 31, 1986). Canada also agreed to share in payment of expenditures incurred between September 1, 1983 to April 1, 1984 under the Agreement.

Two companion agreements were also signed on May 1, 1984 - one between Saskatchewan and the Cities of Regina and Moose Jaw and another between the Cities of Regina and Moose Jaw.

The May 1, 1984 agreement between the City of Regina and the City of Moose Jaw is supplementary to a prior agreement between the parties dated December 11, 1951. Under the terms of the 1951 agreement, the cities co-operated in the building of the water filtration plant at Buffalo Pound Lake. Capital cost and production of that initial project was shared 75 per cent by Regina and 25 per cent by Moose Jaw. The 1984 agreement sets forth a cost sharing formula to accommodate payment of the balance of the cost of the carbon treatment facility after the grants from the Government of Canada and the Government of Saskatchewan have been deducted. The cost sharing arrangement under the new agreement is Regina 72.65 per cent, Moose Jaw 27.35 per cent.

Under the Saskatchewan-Cities of Regina and Moose Jaw Agreement, the City of Regina accepted responsibility for supervision of all aspects of construction of the project. Eligible costs included direct capital expenditures including consultant's fees, planning and design costs, construction costs, supervision costs and interest costs spent on the Project by a City (or Corporation) or by Saskatchewan acting as an agent for a City. Land acquisition was not included.

The Province agreed to pay the City of Regina an amount not exceeding $7,500,000 for the work (including the Federal contribution). An additional amount of $2,500,000 would be paid by the Province towards construction of project works based on 50 per cent of eligible expenditures in excess of $10 million but not more than $15 million.

Schedule B of the Canada-Saskatchewan Agreement estimated that the cash flow for the federal share would be $3.5 million in 1984/85 and $1.5 million in 1985/86. Corresponding provincial shares (including the cities' share) would be $3.5 and $2.5 million respectively. Total expenditures would be $7.0 in 1984/85 and $3.0 in 1985/86.

In the Saskatchewan-Cities Agreement the actual provincial share was set at $1.75 million in 1984/85 and $3.15 million in 1985/86.

It was necessary to extend the agreement between the Province and the Cities past the original expiration date of March 31, 1986 in order to accommodate work on the waste management ponds which continued into the fiscal year 1986-1987.

3.2 Management Structure

A Management Committee was established pursuant to Section 3 of the Canada-Saskatchewan agreement designating one representative of each party (or alternate) to the committee. The mandate of this committee was to be responsible for the general administration of the agreement and to coordinate administrative requirements of the project. The City of Regina, as project manager, provided statements of construction progress and financial status.

The agreements between the Province and the cities mirrored the management committee provision and again, provided for the appointment of a committee member from each party.

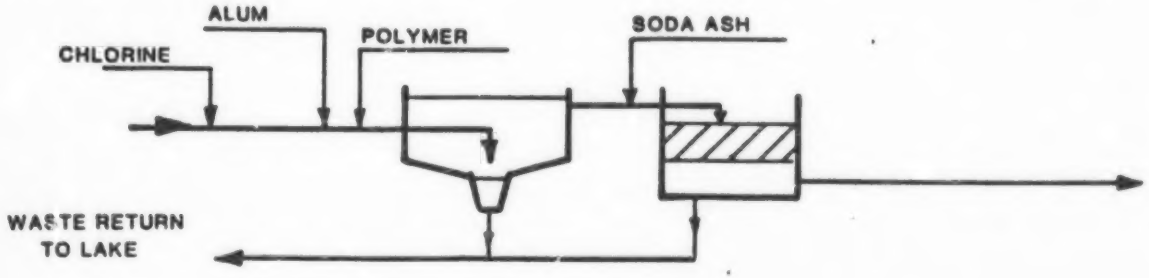
Between June 14, 1984 and August 1, 1986 the committee met a total of 13 times to monitor the progress of the project and design and implement a public information program. Features of the program were:

- A "Sod-Turning" ceremony;
- Informational Signage at the Highway entrance to the plant;
- Informational articles and advertisements in the press;
- A descriptive water bill insert;
- An employee newsletter;
- Bi-Monthly progress reports to the Councils of Regina and Moose Jaw;
- An official commemorative opening;
- A public viewing of the regeneration facilities.

The program was supported by media releases and advanced media information and photo opportunities.

PROCESS FLOW PRIOR TO TASTE AND ODOUR CONTROL

RAW WATER FROM LAKE → SETTLEMENT → FILTRATION → TREATED WATER TO SUPPLY



PROCESS FLOW WITH TASTE AND ODOUR CONTROL

RAW WATER FROM LAKE → SETTLEMENT → FILTRATION → GAC ABSORTION → TREATED WATER TO SUPPLY

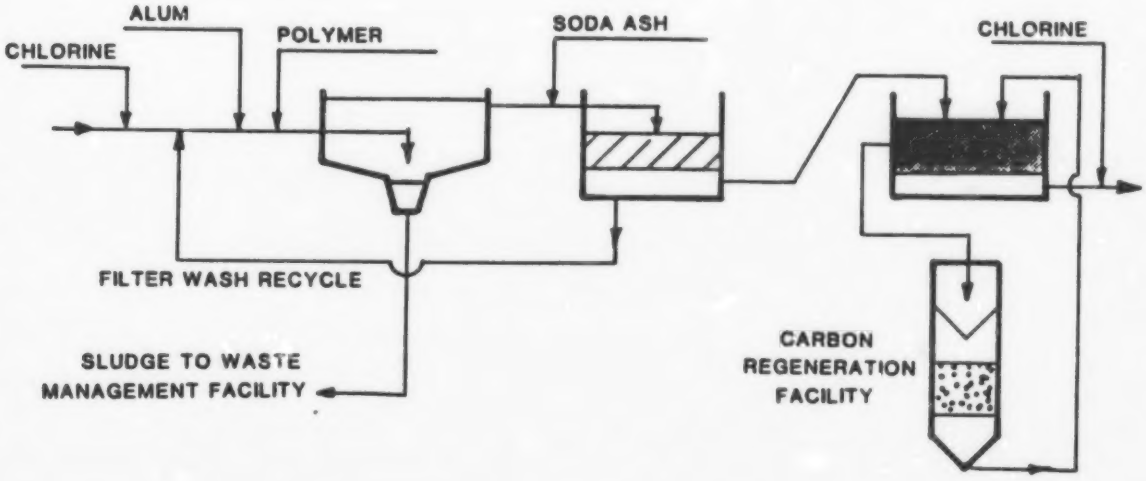


Fig 2 TREATMENT PROCESSES

BUFFALO POUND WATER TREATMENT PLANT

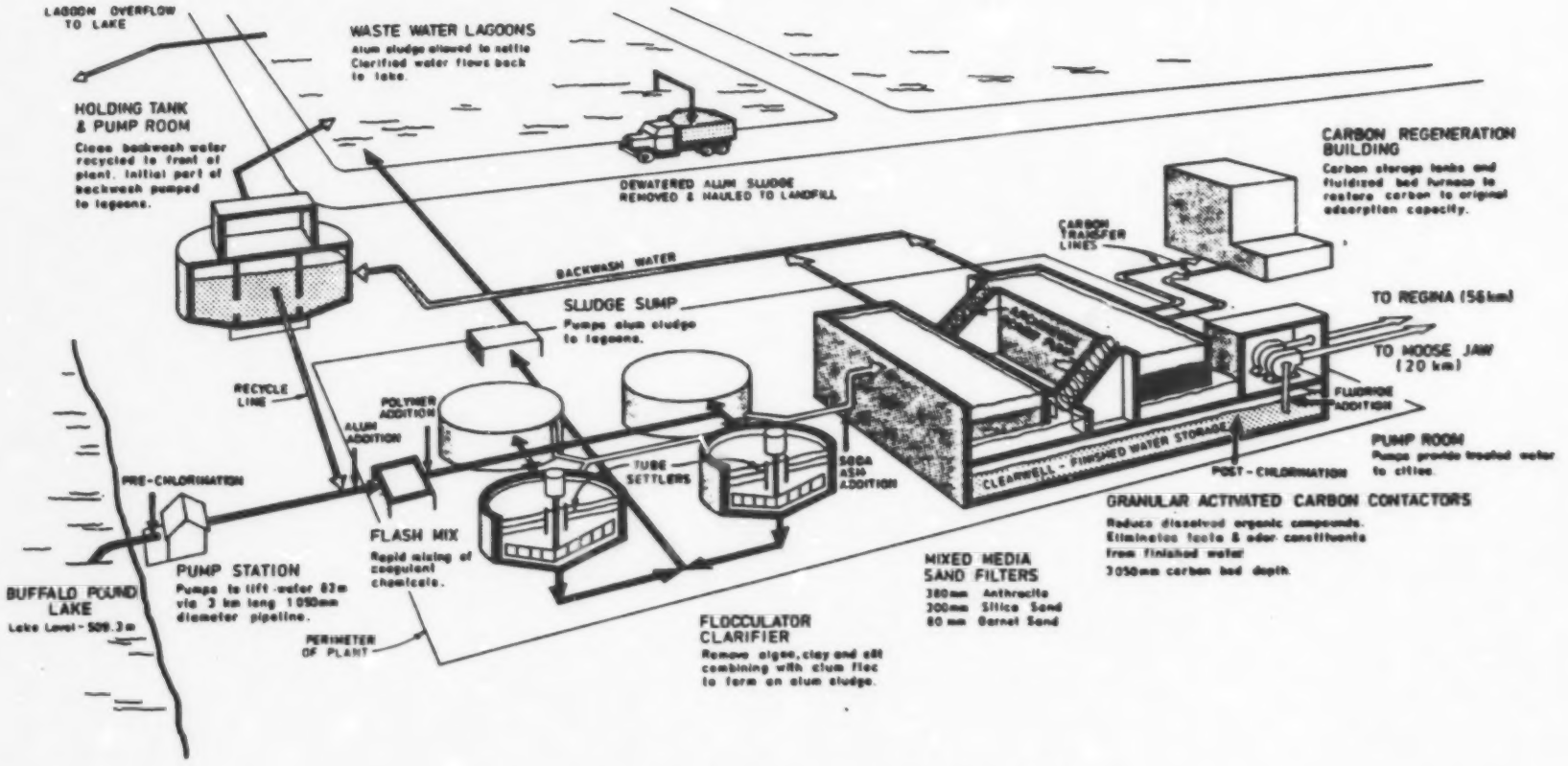

LAGOON OVERFLOW TO LAKE
WASTE WATER LAGOONS
Alum sludge allowed to settle
Clarified water flows back to lake.
HOLDING TANK & PUMP ROOM
Clean backwash water recycled to front of plant. Initial part of backwash pumped to lagoons.
DEWATERED ALUM SLUDGE REMOVED & HAULED TO LANDFILL
CARBON REGENERATION BUILDING
Carbon storage tanks and fluidized bed furnace to restore carbon to original adsorption capacity.
CARBON TRANSFER LINES
BACKWASH WATER
SLUDGE SUMP
Pumps alum sludge to lagoons.
TO REGINA (56 km)
TO MOOSE JAW (20 km)
RECYCLE LINE
POLYMER ADDITION
ALUM ADDITION
FLUORIDE ADDITION
PUMP ROOM
Pumps provide treated water to cities
TUBE SETTLERS
SODA ASH ADDITION
CLEARWELL - FINISHED WATER STORAGE
POST - CHLORINATION
PRE-CHLORINATION
GRANULAR ACTIVATED CARBON CONTACTORS
Reduce dissolved organic compounds.
Eliminates taste & odor constituents from finished water
3050mm carbon bed depth.
FLASH MIX
Rapid mixing of coagulant chemicals.
PUMP STATION
Pumps to lift water 83m via 3 km long 1050mm diameter pipeline.
MIXED MEDIA SAND FILTERS
380mm Anthracite
200mm Silica Sand
80 mm Garnet Sand
BUFFALO POUND LAKE
Lake Level - 509.3 m
PERIMETER OF PLANT
FLOCCULATOR CLARIFIER
Remove algae, clay and silt combining with alum floc to form an alum sludge.

Fig. 3 PLANT LAYOUT

U : 719B

ADP/ MAY 1986

4. BUFFALO POUND WATER TREATMENT WORKS

Fig 2 illustrates the treatment processes and Fig 3 shows the layout of the complete plant.

Prior to implementation of the Taste and Odour Control project, treatment consisted of;

Pre-chlorination - chlorine added to the water for disinfection and effective chemical treatment.

Coagulation - aluminum sulphate and polymer is added to the water to precipitate suspended material and absorb impurities.

Settlement - the coagulated solids settle out of the water and are removed for disposal.

pH Correction - sodium carbonate is added, and/or carbon dioxide is removed to keep the water stable and non-corrosive.

Filtration - final solids removal is achieved by filtering the water through beds containing anthracite, sand and garnet.

The Taste and Odour Control Facilities supplemented these processes by adding;

GAC Adsorption - removal of dissolved organic material by contact with Granular Activated Carbon.

Final Chlorination - addition of chlorine to replace that removed by the GAC.

Carbon Regeneration - the carbon is regenerated to remove the accumulated organic material.

Wash Water Recovery - recycling of waste water from the filter and carbon washing process through the treatment plant.

Waste Management - process wastes are treated and rendered suitable for disposal.

The first two processes named in the above list are additional stages in the treatment processes, whereas, the latter three serve the treatment process.

5. THE TASTE AND ODOUR CONTROL FACILITIES

5.1 Water Quality Objectives

Objectives were established for the Taste and Odour Control Facilities. Of particular significance for this report is the objective for Threshold Odour Number (TON).

A threshold odour number relates the "strength" of a water's odour to the number of dilutions with odourless water needed to render the water odourless. The measurement is made by an experienced laboratory technician using water at an elevated temperature. As well as allocating a number, the test also designates a description for the odour from a standard list. While the test is somewhat arbitary and can be subjective if performed by inexperienced staff, results for the Buffalo Pound water have been consistent and reproducible.

For the Taste and Odour Control Facilities, the results of pilot plant testing suggested that a TON objective level of less than "3" would ensure an adequate level of odour removal.

5.2 The Treatment Processes

5.2.1 GAC Adsorption

The water is passed through beds of Activated Carbon. While in contact with the carbon, dissolved organic material is adsorbed by the carbon and is removed from the water. The GAC is contained in vessels know as contactors. The Buffalo Pound taste and odour facilities use eight rectangular concrete contactors which together contain 750,000 kilograms of carbon. This quantity is selected to control taste and odour for a 100 day operating season under the worst anticipated conditions.

Other equipment is needed to operate the contactors. Two archemedian screw pumps raise filtered water to the inlet of the contactors and backwash pumps provide washwater for periodically flushing accumulated solid material out of the contactors.

5.2.2 Final Chlorination

Activated carbon removes chlorine and chlorine compounds. Hence the treated water leaving the contactors must be re-chlorinated to maintain quality throughout the distribution system.

5.2.3 Carbon Regeneration

At the end of the operating season, the carbon's adsorptive capacity is exhausted and it must be regenerated. For the Buffalo Pound facilities, on site regeneration was found to provide the most cost effective method.

Spent carbon is heated to a high temperature in a fluidised bed regeneration furnance. Organic contaminants are driven off and the carbon is reactivated. Ancillary equipment which serves the regeneration system includes spent and regenerated carbon handling systems and environmental protection devices such as an exhaust gas incinerator and gas scrubber.

5.2.4 Wash Water Recycling

In the original plant, waste water from the treatment plant was discharged to the lake. This disposal method was environmentally questionable as well as wasteful. Wash water recycling returns the wash water from the original plant and the contactors to the head of the treatment process for reuse.

5.2.5 Waste Management

Waste sludges from the settlement process were originally returned to the lake with the wash water. A waste management system, using the natural freeze/thaw cycle, treats the waste on site and renders it suitable for disposal by landfilling.

6. OPERATIONAL EXPERIENCE

The facilities have consistantly met the objective of reducing the TON of unchlorinated finished water from as high as 45 to less than 3. Since the plant was put into service, the two cities have, (apart from one period in 1986 which will be described later), been provided with water which met the consumer's expectations for taste and odour. Figure 4 illustrates the degree to which the taste and odour has been controlled.

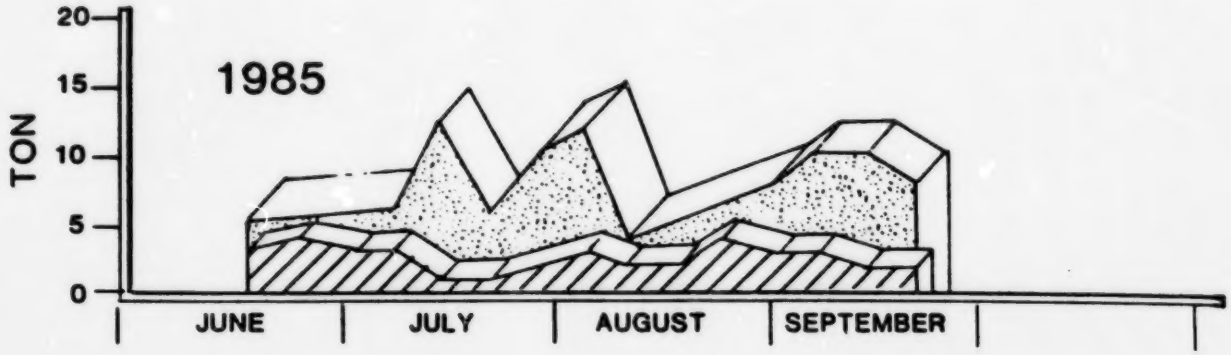
It should be noted that, while taste and odour have not been perceived by the consumers and the objective TON was met, post chlorination does raise the TON of the water to above the objective level. This taste and odour is not perceived to be ojectionable.

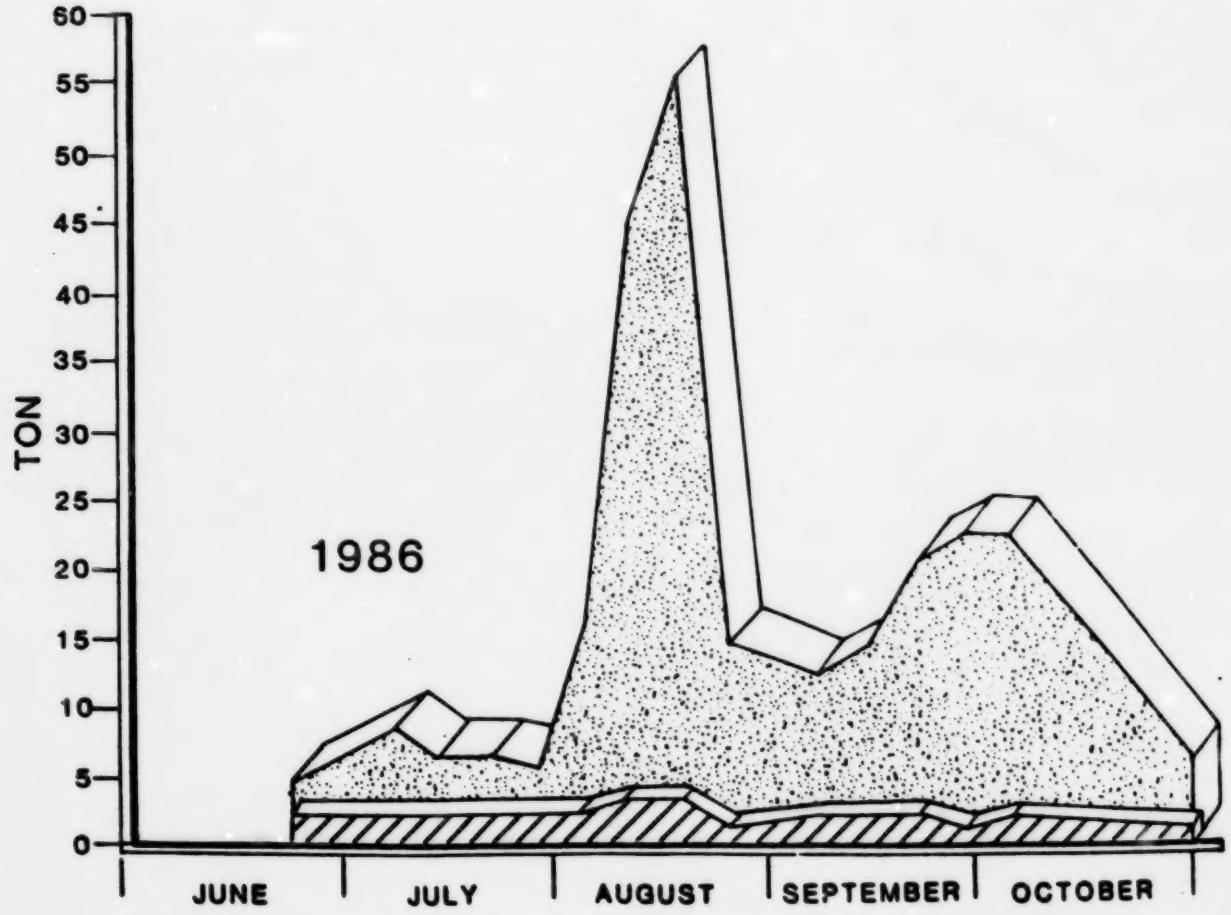
In August, 1986, after the taste and odour facilities had been in service for 6 weeks, taste and odour was noticed by a large number of consumers in the two cities. At the time, the TON level measured in the water was within the objective. The breakthrough coincided with an exceptional algae bloom in the lake which appeared to generate tastes and odours which did not respond to treatment in the predicated manner.

An intense investigation was launched into what was termed the "Taste and Odour Breakthrough". The investigation was difficult because the phenomenon lasted for only three weeks which limited the opportunity for testing. However, enough was learned to establish the reasons for the breakthrough and to devise corrective measures. In 1987 and 1988 modified operational methods were put into place.

At the conclusion of the investigation and following successful operation and testwork in 1987, the plant staff were able to state:

> "When evaluated by the standards of current knowledge on the operation and performance of granular activated carbon contacts in water treatment, the GAC system installed at the Buffalo Pound Water Plant in June, 1985, performs well and is a feasible and economical method of treating the Buffalo Pound Lake water for reduction of odours, organic carbon and trihalomethanes."


1985
TON
20
15
10
5
0
JUNE
JULY
AUGUST
SEPTEMBER


1986
TON
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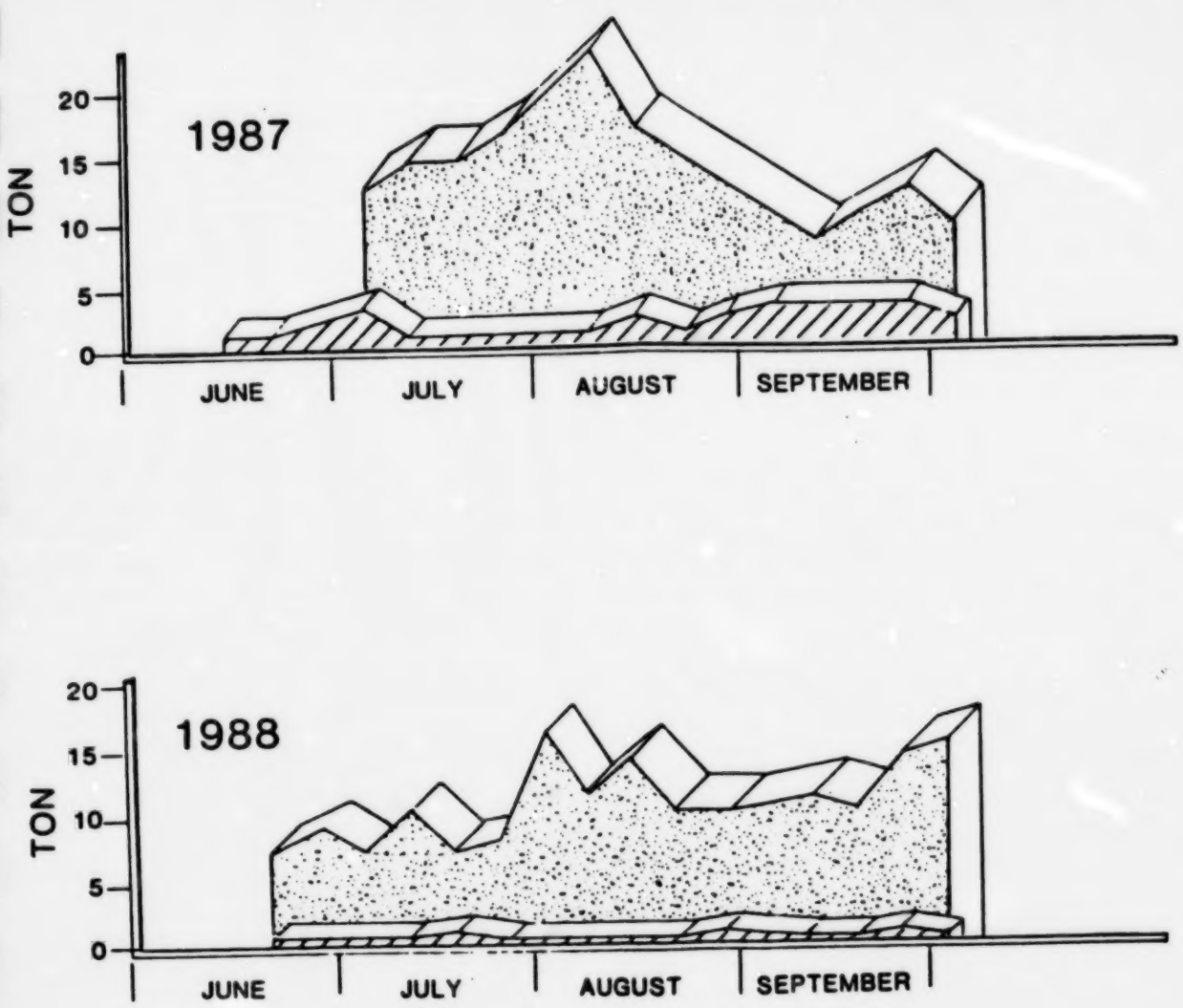

THRESHOLD ODOR NUMBER REDUCTION
1985 - 1988

Fig.4

7. CONCLUSION

Implementation of the Buffalo Pound Taste and Odour control facilities has been successfully achieved. The project has met its objectives and thereby demonstrated that Granular Activated Carbon treatment provides a feasible and economical method of controlling taste and odour in municipal water treatment.

The federal financial commitment of $5 million under the Canada-Saskatchewan Agreement was met before the March 31, 1986 expiry date of the agreement, however the federal representative on the Management Committee agreed to continue his membership on the committee past that date to ensure that the federal interest in the completion of the project was maintained.

Overall, the project can be termed a success in part because of the agreements which outlined the responsibilities of each part and allowed for the monitoring and correction of any potential pitfalls during the course of the project.

Four years of operating experience have demonstrated the value of this process addition. The project was further enhanced by being constructed on time and within budget.

APPENDIX "A"

CANADA-SASKATCHEWAN AGREEMENT RESPECTING THE CONSTRUCTION OF A GRANULAR ACTIVATED CARBON WATER TREATMENT SYSTEM FOR THE CITIES OF REGINA AND MOOSE JAW

THIS AGREEMENT made this 1st day of May, 1984.

BETWEEN:

THE GOVERNMENT OF CANADA (hereinafter referred to as "Canada"), represented by the Minister of the Environment

OF THE FIRST PART,

AND

THE GOVERNMENT OF SASKATCHEWAN (hereinafter referred to as "Saskatchewan"), represented by the Minister of Urban Affairs

OF THE SECOND PART.

WHEREAS Canada and Saskatchewan signed an Economic and Regional Development Agreement (hereinafter referred to as the "ERDA") dated January 30, 1984, for the purpose of facilitating joint cooperation in respect of economic and regional development in the province to achieve the objectives set forth in Section 3 thereof;

WHEREAS the Cities of Regina and Moose Jaw have had a summertime taste and odour problem with their water supplies for a considerable time;

WHEREAS Canada and Saskatchewan recognize that the problem has affected the socio-economic well-being of the two cities;

WHEREAS pursuant to the Government Organization Act, the Minister of the Environment may, with the approval of the Governor in Council, enter into agreements with the government of a province respecting the carrying out of programs for which the Minister is responsible;

WHEREAS by Order in Council P.C. 1984-7/1369, made the 18th day of April, 1984, the Governor in Council has approved that the Minister of the Environment enter into this Agreement on behalf of Canada; and

WHEREAS by Order in Council 457/84, made the 29th day of March, 1984, the Lieutenant Governor in Council has approved that the Minister of Urban Affairs enter into this Agreement on behalf of Saskatchewan.

NOW, THEREFORE IT IS AGREED BETWEEN THE PARTIES HERETO AS FOLLOWS:

SECTION 1: DEFINITIONS

1. In this Agreement, unless the context otherwise requires:

(a) "Certified Statement of Account" means a financial statement of account prepared by Saskatchewan with respect to Eligible Expenditures, the accuracy of which is certified by a senior financial officer of Saskatchewan;

(b) "City" or "Cities" means the City of Regina or Moose Jaw, or both;

(c) "Eligible Expenditures" means direct capital expenditures including consultants fees, planning and design costs, construction costs, supervision costs, public information program costs, and interest charges spent on the Project by a City or by Saskatchewan acting as an agent for a City or by a corporation established by Saskatchewan or a City for the purpose of completing the Project, but does not include costs for the acquisition of land or rights of way;

(d) "Management Committee" means the Committee to be established pursuant to Subsection 3.1;

(e) "Ministers" means the Minister of the Environment for Canada and the Minister of Urban Affairs for Saskatchewan;

(f) "Project" means the construction of a granular activated carbon (GAC) water treatment system at Buffalo Pound Lake water treatment plant to consist of a GAC contactor, a regeneration facility, and a waste management system;

(g) "Public Announcement" means an official notification or declaration relating to the Project or to its progress.

SECTION 2: PURPOSE AND OBJECTIVE

2. The purpose and objective of this Agreement is to provide federal and provincial funds to assist in the construction of the Project.

SECTION 3: ADMINISTRATION AND MANAGEMENT

3.1 The Ministers will establish a Management Committee that will consist of one member appointed by each.

3.2 Each Committee member may designate an alternate to represent him, and the alternate will assume his responsibilities and exercise his powers in his absence.

3.3 The Management Committee will:

(a) be responsible for the general administration of this Agreement;

(b) maintain a detailed working knowledge of the Project;

(c) cooperate in the coordination of administrative requirements;

(d) report on all aspects as required by the Parties;

(e) ensure that the Project complies with the Federal Environmental Assessment Review Process and the requirements of The Environmental Assessment Act of Saskatchewan;

(f) keep minutes of its meetings and records of decisions taken at its meetings;

(g) be responsible for the development and delivery of a joint public information program;

(h) prepare an annual report to the Ministers; and

(i) carry out such other related duties as the Ministers may direct.

SECTION 4: IMPLEMENTATION PROCEDURES

4.1 This Agreement will commence on April 1, 1984, and terminate on March 31, 1986, but Eligible Expenditures incurred on or after September 1, 1983, and before April 1, 1984, will be eligible for cost sharing, and claims and adjustments for work completed before March 31, 1986, may be made up to six months following termination.

4.2 Canada's contributions are solely for the construction of the Project, and Canada shall assume no obligation for the operation and maintenance thereof.

4.3 Saskatchewan agrees that it will complete, or will cause to be completed by the Cities, the Project in the event that the cost of construction exceeds twice the maximum federal contribution stated in Subsection 5.1.

4.4 This Agreement may be amended by mutual agreement of the signatories by an exchange of letters.

4.5 Any dispute between the Parties hereto on any question of law or fact arising out of this Agreement will be determined by the Federal Court of Canada.

4.6 Any notice which is given to the other Party pursuant to this Agreement may be given personally to the person indicated below or sent by registered mail to:

For Canada:

Regional Director
Inland Waters Directorate
Western & Northern Region
Environment Canada
1st Floor, Motherwell Building
Regina, Saskatchewan S4P 3R4

For Saskatchewan:

Assistant Deputy Minister
Saskatchewan Department of Urban Affairs
2151 Scarth Street
Regina, Saskatchewan
S4P 3V7

4.7 Canadian material and equipment, and Canadian consulting and other professional services, will be used for the Project to the extent that they are procurable and that their use is consistent with proper economy and the expeditious completion of the Project.

4.8 The laws and regulations of Saskatchewan which relate to labour matters and conditions of work will apply to all construction work.

4.9 With regard to the applicability of labour standards, the parties agree as follows:

(a) rates of pay shall be those prevailing in the area of employment for each classification of work subject to the minimum wage specified in provincial legislation;

(b) in building and heavy construction, the rates of pay for overtime shall not be less than time and one-half the specified prevailing rate of pay after the hours stipulated for purposes of overtime payment in the relevant federal or provincial standards; and

(c) labour conditions shall be specified in all tendering documents and shall be posted conspicuously in the work place.

It being expressly understood and agreed that to the extent to which there are higher federal or provincial standards applicable to particular occupations or regions, these higher standards may apply.

4.10 Unless this service cannot reasonably be provided, labour is to be recruited through Canada Employment Centres, but where recruitment of labour from appropriate union hiring halls is the usual practice, labour may be recruited in such manner.

4.11 In the employment of persons there will be no discrimination and, in particular, there will be no discrimination based on race, national or ethnic origin, colour, religion, sex, age, or mental or physical disability, but the foregoing does not prevent the implementation of special measures designed to benefit disadvantaged individuals or groups.

SECTION 5: FINANCIAL PROVISIONS

5.1 Canada will provide Saskatchewan with an amount not exceeding five million dollars ($5,000,000.00) or 50% of the Eligible Expenditures, whichever is the lesser, over the term of the Agreement, and the maximum amount with which Canada will provide to Saskatchewan for any one fiscal year covered by this Agreement is set out in Schedule 'B'.

5.2 The funds with which Saskatchewan is provided by Canada under this Agreement will be transferred to the Cities as federal reimbursements or contributions with respect to Eligible Expenditures.

5.3 Saskatchewan will transfer to the Cities the funds provided by Canada, by cheque, identifying the money provided as being a contribution of Canada towards the Project.

5.4 Saskatchewan will keep detailed and accurate accounts and records of money spent under this Agreement.

5.5 Canada will accept Certified Statements of Account as prima facie verification of the proper application of funds, but duly authorized representatives of Canada may audit at all reasonable times all accounts and records which Saskatchewan will keep under this Agreement.

SECTION 6: PAYMENT PROCEDURES

6.1 (a) Saskatchewan will submit to Canada a Certified Statement of Account on or before April 1, 1984, and at least quarterly thereafter, until March 31, 1986. Adjustments made after that date, pursuant to Subsection 4.1, will also be documented by Certified Statements of Account.

(b) A statement setting out the amount and source of all federal funds applied to the Project, other than funds provided by Canada under this Agreement, certified by a senior financial officer of Saskatchewan will accompany the Certified Statements of Account.

6.2 Within 30 days of receipt of a Certified Statement of Account, Canada will remit funds to Saskatchewan.

SECTION 7: PUBLIC INFORMATION

7.1 Canada and Saskatchewan will cooperate in the development of a program of public information respecting the implementation of the Project which will include:

(a) during the course of construction, the erection and maintenance of signs (in both official languages) consistent with federal-provincial and municipal identity graphics guidelines and specifying that the Project is financed by contributions from Canada, Saskatchewan, and the Cities under the ERDA;

(b) the preparation of public information leaflets (in both official languages) explaining the scope of the Project and stating the financial contributions of the Parties; and

(c) the installation of a permanent marker (in both official languages) on the completed Project indicating federal-provincial participation.

7.2 Any Public Announcements and official ceremonies by Canada and Saskatchewan pertaining to the Project will be arranged by the Management Committee.

SECTION 8: EVALUATION

8.1 Either Party may undertake an evaluation of this Agreement. Each Party shall provide the other with such information as may reasonably be required to undertake such assessment.

8.2 An evaluation of this Agreement will be provided in the final annual report prepared by the Management Committee, such report to be prepared by December 31, 1986.

SECTION 9: GENERAL

9.1 Canada's contribution toward payment of the cost of the Project will not operate to vest in Canada any proprietary right, interest, or obligation that Canada otherwise would not have.

9.2 Fulfillment by the Parties of any of the obligations under this Agreement is subject to appropriation of the required resources by the Parliament of Canada and the Legislature of the Province of Saskatchewan, respectively.

9.3 Except for acts of God, Saskatchewan will at all times indemnify and save Canada, its officers, employees, and agents harmless against all claims and demands of third parties in any way arising out of any work undertaken pursuant to this Agreement, except as such claims or demands relate to the acts or negligence of any officer, employee, or agent of Canada.

9.4 This Agreement constitutes the entire Agreement between the Parties with respect to the subject matter hereof and supersedes all previous negotiations and documents relating hereto.

9.5 No member of the House of Commons of Canada or the Senate of Canada will hold, enjoy, or be admitted to any share, part, or benefit from this Agreement, or to any benefit arising therefrom.

9.6 The provisions of the Canada/Saskatchewan ERDA dated January 30, 1984, will apply to this Agreement.

IN WITNESS WHEREOF this Agreement has been executed on behalf of Canada by the Minister of the Environment and on behalf of Saskatchewan by the Minister of Urban Affairs.

In the presence of

GOVERNMENT OF CANADA

Witness

Minister of the Environment

GOVERNMENT OF THE PROVINCE OF SASKATCHEWAN

Witness

Minister of Urban Affairs

SCHEDULE 'A'
CANADA-SASKATCHEWAN AGREEMENT RESPECTING THE
CONSTRUCTION OF A GRANULAR ACTIVATED CARBON
WATER TREATMENT SYSTEM FOR THE CITIES OF REGINA AND MOOSE JAW

INTRODUCTION

The Canada-Saskatchewan Agreement Respecting the Construction of a Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw is undertaken as a subsidiary agreement under the Canada-Saskatchewan Economic and Regional Development Agreement (ERDA) signed on January 30, 1984, by the Premier of Saskatchewan and the federal Minister of State for Economic and Regional Development and Science and Technology.

Regina and Moose Jaw share a common water treatment plant which draws its water from a shallow lake, Buffalo Pound Lake, in the Qu'Appelle River system about 50 km northwest of Regina. In summer and autumn, the Regina and Moose Jaw water supply suffers from a severe taste and odour problem because of weed and algae growth in the lake. The problem has raised questions concerning the quality of the water supply and has reflected negatively on the communities as places to live and work. The construction of a granular activated carbon (GAC) water treatment system will provide an immediate solution to the problem.

Activated carbon has been used in the treatment of public water supplies for over 50 years as a means of removing organic materials that cause taste and odour problems. A more recent technology calls for the use of granular, rather than powdered, carbon. The granular form of activated carbon can be regenerated and reused, thereby reducing annual operating costs.

THE PROJECT

The Project comprises a construction component which will include the GAC treatment system, a carbon regeneration plant, and an enhanced waste management facility.

The GAC treatment system will be installed at Buffalo Pound Lake in series with the existing filtration system and will be the last step in the process before water is chlorinated and piped to Regina and Moose Jaw. The regeneration plant will be constructed near the treatment plant for the purpose of regenerating the activated carbon granules as required. This process involves removing the carbon, drying it, and burning off the waste. The enhanced waste management facility is, in essence, a lagoon system for disposal of algae and other organic material that is removed from Buffalo Pound Lake water during the treatment process. At present, this material is returned to the lake.

SCHEDULE 'B'

CANADA-SASKATCHEWAN AGREEMENT RESPECTING THE CONSTRUCTION OF A GRANULAR ACTIVATED CARBON WATER TREATMENT SYSTEM FOR THE CITIES OF REGINA AND MOOSE JAW

Estimated Cash Flow (Shareable costs under this Agreement)

	Federal Share ($ millions)	Provincial Share	Total
1984/85	3.5	3.5	7.0
1985/86	1.5	1.5	3.0
Agreement Total	5.0	5.0	10.0
Agreement Percent	50.0	50.0	100.0

APPENDIX "B"

BYLAW NO. 7751-AG-B84

A BYLAW OF THE CITY OF REGINA TO AUTHORIZE THE MAYOR AND CITY CLERK TO EXECUTE AN AGREEMENT BETWEEN THE GOVERNMENT OF SASKATCHEWAN, THE CITY OF REGINA AND THE CITY OF MOOSE JAW RESPECTING THE CONSTRUCTION OF A GRANULAR ACTIVATED CARBON WATER TREATMENT SYSTEM FOR THE CITIES OF REGINA AND MOOSE JAW

THE COUNCIL OF THE CITY OF REGINA ENACTS AS FOLLOWS:

1. The Agreement respecting the construction of a Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw, set forth in Exhibit "A" attached hereto, is hereby made a part of this Bylaw in all respects.

2. That the Mayor and City Clerk of the City of Regina are hereby authorized to sign the Agreement on behalf of the said City of Regina and affix thereto the Corporate Seal of the City of Regina.

3. That this Bylaw shall come into force and effect the date the attached Agreement, marked as Exhibit "A", respecting the construction of a Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw is executed by the Government of Saskatchewan and the Cities of Regina and Moose Jaw.

READ A FIRST TIME THE 26th DAY OF MARCH A.D. 1984;

READ A SECOND TIME THE 26th DAY OF MARCH A.D. 1984;

READ A THIRD TIME AND PASSED THE 26th DAY OF MARCH A.D. 1984.

(SGD.) L. P. SCHNEIDER
Mayor

(SGD.) F. E. HOWARD
City Clerk

(SEAL)

CERTIFIED A TRUE COPY

City Clerk

Approved as to form this 22nd day of March 1984

SASKATCHEWAN-CITIES OF REGINA AND MOOSE JAW AGREEMENT RESPECTING THE CONSTRUCTION OF A GRANULAR ACTIVATED CARBON WATER TREATMENT SYSTEM FOR THE CITIES OF REGINA AND MOOSE JAW

THIS AGREEMENT made this 1st day of May , A.D., 1984.

BETWEEN:

THE GOVERNMENT OF SASKATCHEWAN (hereinafter referred to as "Saskatchewan"), represented by the Minister of Urban Affairs.

OF THE FIRST PART

AND

THE CITY OF REGINA in the Province of Saskatchewan

OF THE SECOND PART

AND

THE CITY OF MOOSE JAW in the Province of Saskatchewan

OF THE THIRD PART

WHEREAS the Government of Canada and the Government of Saskatchewan on the 1st day of May , 1984, entered into an Agreement Respecting the Construction of a Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw;

WHEREAS the Cities of Regina and Moose Jaw have had a taste and odour problem with their water supplies for a considerable time;

WHEREAS Saskatchewan and the Cities of Regina and Moose Jaw recognize that the problem has affected the socio-economic well-being of the two cities;

WHEREAS Saskatchewan, pursuant to The Department of Urban Affairs Act may, subject to the approval of the Lieutenant Governor-in-Council, make grants to urban municipalities for the purpose of furthering activities related to Urban Affairs and may enter into agreements for such purposes;

WHEREAS the Council of the City of Regina, by Bylaw passed on the day of , 1984, has authorized the execution of this Agreement by and on behalf of the City of Regina; and

WHEREAS the Council of the City of Moose Jaw, by Bylaw passed on the 26th day of March, 1984, has authorized the execution of this Agreement by and on behalf of the City of Moose Jaw.

NOW, THEREFORE IT IS AGREED BETWEEN THE PARTIES HERETO AS FOLLOWS:

SECTION 1: DEFINITIONS

1. In this Agreement, unless the context otherwise requires:

(a) "Certified Statement of Account" means a financial statement of account prepared by the City of Regina with respect to Eligible Expenditures, the accuracy of which is certified by a senior financial officer of the City of Regina;

(b) "City" or "Cities" means the City of Regina or Moose Jaw, or both;

(c) "Eligible Expenditures" means direct capital expenditures including fees of consultants, planning and design costs, construction costs, supervision costs, and interest charges, spent on the Project by a City or by Saskatchewan acting as an agent for a City or by a Corporation established by Saskatchewan or a City for the purpose of completing the Project but does not include expenditures for the acquisition of land or rights of way;

(d) "Management Committee" means the Committee to be established pursuant to Section 3.1.

(e) "Minister of Urban Affairs" means the Minister of Urban Affairs or other Minister designated to represent Saskatchewan for the purpose of this Agreement;

(f) "Project" means the construction of a granular activated carbon (GAC) water filtration system at Buffalo Pound Lake water treatment plant to consist of a GAC filter, a regeneration facility and a waste management system.

(g) "Public Announcement" means a formal notification or declarati relating to the Project or its purpose.

SECTION 2: PURPOSE AND OBJECTIVE

2. The purpose and objective of this Agreement is to provide federal and provincial funds to assist in the construction of the Project.

SECTION 3: ADMINISTRATION AND MANAGEMENT

3.1 The Parties will establish a Management Committee that will consist of one member appointed by each.

3.2 Each Committee member may designate an alternative to represent him, and the alternate will assume his responsibilities and exercise his powers in his absence.

3.3 The Management Committee will:

(a) be responsible for the general administration of this Agreement;

(b) maintain a detailed working knowledge of the Project;

(c) cooperate in the coordination of administrative requirements;

(d) report on all aspects as required by the Parties;

(e) ensure that the Project complies with the Federal Environment Assessment Review Process and the requirements of The Environmental Assessment Act of Saskatchewan;

(f) keep minutes of its meetings and records of decisions taken at its meetings;

(g) be responsible for the development and delivery of a joint public information program;

(h) prepare an annual report to the Parties: and

(i) carry out such other related duties as the Parties may direct.

SECTION 4: IMPLEMENTATION PROCEDURES

4.1 This Agreement commences on April 1, 1984 and terminates on March 31, 1986, but Eligible Expenditures incurred on or after September 1, 1983 and before April 1, 1984 are eligible for cost sharing and claims and adjustments for work completed before March 31, 1986 may be made up to six months following termination.

4.2 Canada's and Saskatchewan's contributions are soley for the construction of the Project, and neither Canada or Saskatchewan shall assume any obligation for the operation and maintenance thereof.

4.3 The Cities agree that they will complete the Project regardless of the total final cost.

4.4 This Agreement may be amended by mutual agreement of the signatories by an exchange of letters.

4.5 Any dispute between the Parties hereto on any question of law or fact arising out of this Agreement will be determined according to the laws of Saskatchewan.

4.6 Any notice which is given to the other Parties pursuant to this Agreement may be given personally to the persons indicated below or sent by registered mail to:

For Saskatchewan:

Deputy Minister of Urban Affairs
Room 430, 2151 Scarth Street
Regina, Saskatchewan
S4P 3V7

For City of Regina:

City Clerk
City of Regina
City Hall
2476 Victoria Avenue
Regina, Saskatchewan
S4P 3C8

For the City of Moose Jaw:

City Clerk
City of Moose Jaw
City Hall
228 Main Street North
Moose Jaw, Saskatchewan
S6H 3J8

4.7 Canadian material and equipment, and Canadian consulting and other professional services, will be used for the Project to the extent that they are procurable and that their use is consistant with proper economy and the expeditious completion of the Project.

4.8 The laws and regulations of Saskatchewan which relate to labour matters and conditions of work apply to all construction work.

4.9 With regard to the applicability of labour standards, the parties agree as follows:

(a) rates of pay shall be those prevailing in the area of employment for each classification of work subject to the minimum wage specified in provincial legislation;

(b) in building and heavy construction, the rates of pay for overtime shall not be less than time and one-half the specified prevailing rate of pay after the hours stipulated for purposes of overtime payment in the relevant federal or provincial standards; and

(c) labour conditions shall be specified in all tendering documents and shall be posted conspicuously in the work place.

It being expressly understood and agreed that to the extent to which there are higher federal or provincial standards applicable to particular occupations or regions, these higher standards may apply.

4.10 Unless this service cannot reasonably be provided, labour is to be recruited through Canada Employment Centres; but, where recruitment of labour from appropriate union hiring halls is the usual practice, labour may be recruited in such manner.

4.11 In the employment of persons there will be no discrimination, and in particular, there will be no discrimination based on race, national or ethnic origin, colour, religion, sex, age or mental or physical disability; but, the foregoing does not prevent the implementation of special measures designed to benefit disadvantaged individuals or groups.

SECTION 5: FINANCIAL PROVISIONS

5.1 The Province will provide to the City of Regina the following:

(a) An amount including the Federal contribution not exceeding $7,500,000. toward the Eligible Expenditures. This amount will be paid on the basis of 75% of the first $10,000,000. of Eligible Expenditures; and

(b) A further amount not exceeding $2,500,000. toward the Eligible Expenditures incurred in construction of the Project. This amount will be paid on the basis of 50% of the Eligible Expenditures in excess of $10,000,000. but not more than $15,000,000.; and

(c) A further amount equal to 50% of Project design costs incurred by the Cities prior to September 1, 1983 provided that the total contribution from the Province including the Federal contribution does not exceed $10,000,000..

5.2 The Cities hereby warrant that they have made all necessary arrangements to finance that portion of the costs of the Project for which they are responsible.

5.3 The City of Regina will keep detailed and accurate accounts and records of money spent under this Agreement.

5.4 Saskatchewan will accept Certified Statements of Account as prima facie verification of the proper application of funds, but duly authorized representatives of Saskatchewan may audit at all reasonable times all accounts and records which the City of Regina will keep under this Agreement.

SECTION 6: PAYMENT PROCEDURES

6.1 (a) The City of Regina will submit to Saskatchewan a Certified Statement of Account on or before April 1, 1984 and at least quarterly thereafter, until March 31, 1986. Adjustments made after that date pursuant to Clause 4.1 shall also be documented by Certified Statements of Account.

(b) A statement setting out the amount and source of all federal and provincial funds applied to the Project, other than funds provided by Canada and Saskatchewan under this Agreement, certified by a senior financial officer of The City of Regina will accompany the Certified Statements of Account.

6.2 Within 45 days of receipt of a Certified Statement of Account, Saskatchewan will remit funds to The City of Regina.

SECTION 7: PUBLIC INFORMATION

7.1 Saskatchewan and the Cities will cooperate in the development of a program of public information respecting the implementation of the Project which will include:

(a) during the course of construction, the erection and maintenance of signs (in both official languages) consistent with federal, provincial and City identity graphics quidelines and specifying that the Project is financed by contributions from Canada, Saskatchewan, and the Cities under the ERDA:

(b) the preparation of public information leaflets (in both official languages) explaining the scope of the Project and stating the financial contributions of the Parties; and

(c) the installation of a permanent marker (in both official languages) on the completed Project indicating federal-provincial participation.

7.2 Any Public Announcements and official ceremonies by Canada, Saskatchewan, or the Cities pertaining to the Project undertaken pursuant to this Agreement will be arranged by the Management Committee.

SECTION 8: EVALUATION

8.1 Any Party may undertake an evaluation of this Agreement. Each Party shall provide the others with such information as may reasonably be required to undertake such assessment.

8.2 An evaluation of this Agreement shall be provided in the final annual report prepared by the Management Committee, such report to be prepared by December 31, 1986.

SECTION 9: GENERAL

9.1 The contribution of Canada and Saskatchewan toward the costs of the Project will not operate to vest in Canada or Saskatchewan any proprietary right, interest or obligation that Canada or Saskatchewan otherwise would not have.

9.2 Fulfillment by the Parties of any of the obligations under this Agreement is subject to appropriation of the required resources by the Parliament of Canada and the Legislature of the Province of Saskatchewan, respectively.

9.3 Except for acts of God, the Cities will at all times indemnify and save Canada and Saskatchewan, their officers, employees and agents harmless against all claims and demands of third parties in any way arising out of any work undertaken pursuant to this Agreement, except as such claims or demands relate to the acts or negligence of any officer, employee, or agent of Canada or Saskatchewan.

9.4 This Agreement constitutes the entire Agreement between the Parties with respect to the subject matter hereof and supercedes all previous negotiations and documents relating hereto.

IN WITNESS WHEREOF this Agreement has been executed on behalf of Saskatchewan by the Minister of Urban Affairs and the Cities have caused to be affixed hereto their corporate seals as attested by the hands of their proper officers on their behalf.

GOVERNMENT OF THE PROVINCE OF SASKATCHEWAN

(SGD.) D. M. INNES
Witness

(SGD.) T. EMBURY
Minister of Urban Affairs

CITY OF REGINA

(SGD.) L. P. SCHNEIDER
Mayor

(SGD.) F. E. HOWARD
City Clerk

CITY OF MOOSE JAW

(SGD.) L. H. LEWRY
Mayor

(SGD.) G. STRATTON
City Clerk

Regina, Saskatchewan

CERTIFIED A TRUE COPY

.....
City Clerk

SCHEDULE 'A'

SASKATCHEWAN-CITIES OF REGINA AND MOOSE JAW

AGREEMENT RESPECTING THE CONSTRUCTION OF A GRANULAR ACTIVATED CARBON WATER TREATMENT SYSTEM FOR THE CITIES OF REGINA AND MOOSE JAW

INTRODUCTION

Regina and Moose Jaw share a common water treatment plant which draws its water from a shallow lake, Buffalo Pound Lake, in the Qu'Appelle River system about 50 km northwest of Regina. In the summer and autumn the Regina and Moose Jaw water supply suffers from a severe taste and odour problem because of weed and algae growth in the Lake. The problem has raised questions concerning the quality of the water supply and indirectly adversely impacted on the image of the communities as a place to live and work. The construction of a granular activated carbon (GAC) treatment system will provide a solution to the problem.

Activated carbon has been used in the treatment of public water supplies for over 50 years as a means of removing organic materials that cause taste and odour problems. A more recent technology calls for the use of granular, rather than powdered, carbon. The granular form of activated carbon can be regenerated and reused thereby reducing annual operating costs.

THE PROJECT

The Project comprises a construction component as well as a related public information program. The construction component will include the GAC treatment system, a carbon regeneration plant, and an enhanced waste management facility.

The GAC treatment system would be installed at Buffalo Pound Lake in series with the existing filtration system and would be the last step in the process before water is chlorinated and piped to Regina and Moose Jaw. The regeneration plant will be constructed near the treatment plant for the purpose of regenerating the activated carbon granules as required. This process involves removing the carbon, drying it, and burning the waste off. The enhanced waste management facility is, in essence, a lagoon system for disposal of algae and other organic material that is removed from Buffalo Pound Lake water during the treatment process. At present, this material is returned to the Lake.

SCHEDULE 'B'

SASKATCHEWAN-CITIES OF REGINA AND MOOSE JAW

AGREEMENT RESPECTING THE CONTRUCTION OF A GRANULAR ACTIVATED CARBON WATER TREATMENT SYSTEM FOR THE CITIES OF REGINA AND MOOSE JAW

Estimated Cash Flow

Fiscal Year	Federal Share	Provincial Share	Cities Share	Total
	($ millions)			
1984-85	3.5	1.75	1.75	7.0
1985-86	1.5	3.25	3.25	8.0
Agreement Total	5.0	5.0	5.0	15.0

APPENDIX "C"

BYLAW NO. 7750-AG-B84

A BYLAW OF THE CITY OF REGINA TO AUTHORIZE THE MAYOR AND CITY CLERK TO EXECUTE AN AGREEMENT BETWEEN THE CITY OF REGINA AND THE CITY OF MOOSE JAW RESPECTING THE CONSTRUCTION OF A GRANULAR ACTIVATED CARBON WATER TREATMENT SYSTEM FOR THE CITIES OF REGINA AND MOOSE JAW

WHEREAS at a regular meeting of the Council of The City of Regina duly convened and held on the 4th day of December, A.D. 1951, a quorum being then present, the Council of the City of Regina by motion authorized the execution of an Agreement between the City of Moose Jaw, Saskatchewan, and the City of Regina, Saskatchewan relating to the Buffalo Pound Lake Water Project;

AND WHEREAS the said Agreement was duly executed on the 11th day of December, A.D. 1951;

AND WHEREAS at a regular meeting of the Council of the City of Regina duly convened and held on the 14th day of January, A.D. 1954, a quorum being present, the Council of the City of Regina by Bylaw No. 2654 did ratify and confirm the said Agreement;

AND WHEREAS the Province of Saskatchewan and the Cities of Regina and Moose Jaw have entered into an Agreement respecting the construction of a Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw;

AND WHEREAS the Cities of Regina and Moose Jaw deem it both desirable and necessary to enter into an Agreement respecting their participation in the construction of a Granular Activated Carbon Water Treatment System.

NOW, THEREFORE, THE COUNCIL OF THE CITY OF REGINA ENACTS AS FOLLOWS:

1. The Agreement respecting the construction of a Granular Activated Carbon Water Treatment System for the Cities of Regina and Moose Jaw, set forth in Exhibit "A" attached hereto, is hereby made a part of this Bylaw in all respects.

2. That the Mayor and City Clerk of the City of Regina are hereby authorized to sign the Agreement on behalf of the said City of Regina and affix thereto the Corporate Seal of the City of Regina.

READ A FIRST TIME THE 26th DAY OF MARCH A.D. 1984;

READ A SECOND TIME THE 26th DAY OF MARCH A.D. 1984;

READ A THIRD TIME AND PASSED THE 26th DAY OF MARCH A.D. 1984.

(SGD.) L. P. SCHNEIDER
Mayor

(SGD.) F. E. HOWARD
City Clerk

(SEAL)

CERTIFIED A TRUE COPY

City Clerk

Approved as to form this 26th day of March 19 84

"A"

THIS AGREEMENT MADE IN DUPLICATE THIS 1st DAY OF May, 1984.

BETWEEN:

THE CITY OF REGINA,
in the Province of Saskatchewan,
(hereinafter called "Regina")

OF THE FIRST PART

- and -

THE CITY OF MOOSE JAW,
in the Province of Saskatchewan,
(hereinafter called "Moose Jaw")

OF THE SECOND PART

WHEREAS the Parties did under written agreement of December 11, 1951 build a six million imperial gallon a day (6 M.I.G.D.) water filtration plant at Buffalo Pound Lake. The capital cost and production of which was shared, Regina 75% and Moose Jaw 25%.

AND WHEREAS the Parties did expand the said filtration plant in 1957 by 6 M.I.G.D. under agreement whereby the capital cost and production of this expansion was shared, Regina 51.7% and Moose Jaw 48.3%.

AND WHEREAS the Parties did expand the said filtration plant for a second time in 1967 by 18 M.I.G.D. under agreement whereby the capital cost would be shared, Regina 80%, Moose Jaw 20%, and the water production of the expansion would be shared, Moose Jaw 3 M.I.G.D. or 20% whichever was the greater, Regina the remainder.

AND WHEREAS the Government of Canada and the Government of the Province of Saskatchewan are prepared to assist in the funding of the construction of the proposed granular activated carbon contactors, carbon regeneration facility and waste management facility.

AND WHEREAS the Parties hereto are in agreement that the City of Regina will proceed to carry out the proposed filtration plant development for water quality improvement.

Subject to the Government of Canada and the Government of the Province of Saskatchewan assisting in the funding of the construction of the proposed filtration plant development for water quality improvement, the parties hereto covenant and agree with each other as follows:

1. For the purpose of this Agreement, the expression "Plant" shall mean and include all lands, buildings and equipment now under the joint capital and cost-sharing agreements between the cities of Regina and Moose Jaw.

2. The cities of Moose Jaw and Regina shall share the available treated water and costs for this project as follows:

	Regina		Moose Jaw	
Original Plant 1954 - 6 migd	75%	4.5 migd	25%	1.5 migd
First Expansion 1957 - 6 migd	51.7%	3.1 migd	48.3%	2.9 migd
Second Expansion 1967 - 18 migd (Net 15.25 migd)	80%	12.2 migd	20%	3.05 migd
Modifications 1981 (Net 1.75 migd)	72.55%	1.27 migd	27.45%	0.48 migd
		21.07 migd		7.93 migd

Total Net Production 29 migd

Allocation of Water (and sharing of Costs of GAC Improvements)

Regina = $\frac{21.07}{29}$ = 72.65%

Moose Jaw = $\frac{7.93}{29}$ = 27.35%

3. To construct a Gravity Granular Activated Carbon facility to improve the taste, odour and other related treated water quality problems, at an estimated capital cost of Ten Million, Five Hundred Thousand Dollars ($10,500,000.00); the actual cost after deducting the grants from the Government of Canada and the Government of Saskatchewan shall be shared proportionately by both cities in a ratio: Regina 72.65%, Moose Jaw 27.35%.

4. To construct a Carbon Regeneration Facility to regenerate the carbon at an estimated cost of Two Million, Six Hundred and Fifty Thousand Dollars ($2,650,000.00); the actual cost after deducting the grants from the Government of Canada and the Government of Saskatchewan shall be shared proportionately by both cities in a ratio of Regina 72.65% and Moose Jaw 27.35%.

5. To construct a Waste Management facility as may be deemed necessary using "Natural Freeze Thaw Method" without sludge thickening at an estimated cost of One Million, Eight Hundred and Fifty Thousand Dollars ($1,850,000.00) the actual cost after deducting the grants from the Government of Canada and the Government of Saskatchewan shall be shared proportionately by both cities in a ratio of Regina 72.65% and Moose Jaw 27.35%.

6. It is understood and agreed by both parties that work on "Plant" will proceed according to the following sequence:

(a) Gravity Granular Activated Carbon Facility;
(b) Carbon Regeneration Facility;
(c) Waste Management Facility;

7. Payment to Regina by Moose Jaw shall be based on the actual cost of construction and engineering after deducting the grants from the Government of Canada and the Government of Saskatchewan and shall be remitted to Regina within Thirty (30) days upon receipt of billing.

8. This agreement is supplementary to a prior agreement between the parties hereto, dated December 11, 1951; and all provisions of the said prior agreement shall remain in force, unless inconsistent with this present agreement.

9. The parties hereto agree that none of the provisions of the Partnership Act shall apply to this Agreement.

10. This Agreement shall take effect and be binding upon the parties hereto upon passing of the last bylaws authorizing both parties to execute this Agreement.

IN WITNESS WHEREOF the Parties hereto have executed the within Agreement in their respective corporate names and their respective corporate seals have been hereunto affixed under the hands of their proper officers in that behalf, the day and date first above written.

THE CITY OF REGINA

(SGD.) L. P. SCHNEIDER
Mayor

(SGD.) F. E. HOWARD
City Clerk

THE CITY OF MOOSE JAW

(SGD.) L. H. LEURY
Mayor

(SGD.) G. STRATTON
City Clerk

3059F

CERTIFIED A TRUE COPY

City Clerk